CHP Plan of Action

By Dan Reicher
Deputy Assistant Secretary, Energy Efficiency and Renewable Energy
U.S. Department of Energy

Introduction

Combined heat and power (CHP), formally known as cogeneration, is the ability to generate electrical/mechanical and thermal energy (including cooling and refrigeration) simultaneously at the point of use. Recent technological advances have made CHP systems more efficient and less expensive. International concerns about global climate change has increased the interest of business leaders and policy officials in the environmental benefits of CHP. In fact, CHP has been identified as one of the most cost-effective near-termn solutions to reduce global carbon emissions. In certain industrial, commercial, institutional, and district energy applications, the energy efficiency of CHP systems can exceed 80%.

On December 1, 1998, at the CHP Summit, the U.S. Department of Energy (DOE) announced a goal to double the amount of CHP capacity in the United States by the year 2010, equal to approximately 46 gigawats. To reach this target, DOE is launching an aggressive program to address a wide range of institutional, regulatory, and market barriers to expanded use of CHP. The *CHP Challenge* program has begun working with a number of organizations to strengthen collaborative efforts and to raise awareness about the benefits of CHP.

Within the DOE's Office of Energy Efficiency and Renewable Energy, the *CHP Challenge* is working with the Office of Industrial Technologies, the Office of Buildings and Power Technologies, the Federal Energy Management Program, the Office of Fossil Energy, and the Regional Support Offices.

Other federal agencies involved in the *CHP Challenge* include the U.S. Environmental Protection Agency and the Department of Defense. State organizations include energy and economic development offices, environmental protection agencies, and public utility commissions. Private organizations supporting the *CHP Challenge* include national laboratories and trade associations such as the U.S. Combined Heat and Power Association (U.S. CHPA), the International District Energy Association (IDEA), the Distributed Power Coalition of America (DPCA), the Gas Research Institute (GRI), and the American Gas Association (AGA).

Together, we are meeting the challenge articulated at the CHP Summit by Peter Carroll of Solar Turbines, to:

- do better analysis
- be cognizant of reliability
- add value, and
- move quickly.

Therefore, the Department of Energy is proposing the *CHP Action Plan* which focuses on the most important near, mid-, and long-term actions which the above listed organizations and institutions can collectively take to further CHP in communities across the country. I believe the Action Plan can be the basis for a nationwide emphasis on combined heat and power which will save energy, improve efficiencies, make use of distributed resources, and offer organizations and communities the opportunity for energy self-sufficiency.

The CHP Action Plan

Step 1. Develop a CHP Vision - A Template of CHP Opportunities for the Future

Our goal is to double the use of combined heat and power systems by the year 2010, and to achieve a 56% efficiency rate in the generation of electric power. Is this goal achievable? Is the timeframe too short, too long, or just right? Should the vision extend to all end use sectors, including residential, commercial, industrial, and institutional? What opportunities exist for using CHP in district heating and cooling applications? The Vision - Template will outline some of the answers to these questions.

Step 2. Quantify the Benefits of a CHP-Friendly World

The benefits of expanded use of CHP will be quantified in terms of

- energy savings
- carbon reductions
- productivity improvements
- cost savings
- air pollution reductions.

Energy loads, steam requirements, and the infrastructure for energy demand will be quantified as well. This will be an ongoing activity.

Step 3. Share This Vision With Others

The Vision will be shared with other organizations, institutions, and decision-makers, to determine if it is realistic and achievable. It will be analyzed to see if it can be integrated with other policies and programs of the federal, state, and local government, with industries and commercial organizations, and with institutions throughout the country.

Sharing the Vision will require enhanced informational and outreach activities, including sponsorship of additional conferences and workshops; development of informational materials, fact sheets, and data generation.

Step 4. Develop a Roadmap for CHP

The CHP Roadmap will help us determine where we collectively need to go to achieve the

Vision. The Roadmap will be composed of three elements:

- Technology
- Policies
- Markets

What technical developments (advanced technologies) are needed? What policies/legislative changes need to be made? In way ways does the market need to be stimulated to make CHP cost-effective? How do we make people aware of these elements of the Roadmap, including the public, Congress, the states, and potential residential, commercial, industrial, and institutional users? What are the highest priorities?

The Roadmap will be integrated with DOE's distributed generation and reliability work, so they may build on one another.

Step 5. Develop an Action Plan to Address the Roadmap

An Action Plan will be developed to address the Roadmap. This Plan will address priority needs, and will include specific assignments and schedules. The Action Plan will include

- Analysis
- Policy Measures
- Outreach and Public Relations
- Development of Niche Markets

A variety of products will be designed for outreach purposes, including production of videotapes, in-school curriculum materials, and television/radio messages which are produced cooperatively with trade associations.

Step 6. Measure Progress Toward Achieving the Action Plan

Critical paths in the Roadmap will be identified so that challenges may be addressed immediately. A set of quality measurements will be designed to measure progress.

Step 7. Review of Critical Action Plan Items

Critical items in the Action Plan will be reviewed; the Roadmap reassessed, and the Vision reviewed as well. The DOE, working cooperatively with users, will continuously analyze the priorities established in the Vision and Roadmapping exercises. Successes will be demonstrated and reported, through articles in professional journals, posting on Web sites, and at meetings.

Summary

The overall process of developing and implementing an Action Plan for Combined Heat and Power will be

- Inclusive
- Transparent
- Expedited (influence the appropriations process as well as the international arena)
- Productive, with actions carried out in parallel
- Priority driven
- Pragmatic

Specific activities which may be implemented include influencing Congressional policy and appropriations for CHP funding; developing cooperative working relationships and actions with the U.S. Environmental Protection Agency; influencing international clean air activities, and the involvement of CHP in meeting clean air act requirements. Other activities may include developing effective legislative and regulatory solutions to CHP barriers; providing input to the Administration's restructuring plan and State implementation plans (SIPS) under the Clean Air Act Amendments; getting involved in state and local siting and permitting programs; and sponsoring joint workshops on CHP.